

#### Digital Output Board with Opto-Isolation for PCI Express

#### **DO-128L-PE**



\* Specifications, color and design of the products are subject to change without notice.

#### **Features**

#### Optocoupler isolated open-collector outputs (current sink type)

This product has the 128 channels of Optocoupler isolated open-collector output (current sink type) whose response speed is 200µsec. Common terminal provided per 16channels, capable of supporting a different external power supply. Supporting driver voltages of 12 - 24 VDC for I/O.

#### Optocoupler bus isolation

As the PC is isolated from the input and output interfaces by Optocoupler, this product has excellent noise performance.

Windows/Linux compatible driver libraries are attached. Using the attached driver library API-PAC(W32) makes it possible to create applications of Window/Linux. In addition, a diagnostic program by which the operations of hardware can be checked is provided.

#### Output circuits include zener diodes for surge voltage protection and poly-switches for overcurrent protection.

Zener diodes are connected to the output circuits to protect against surge voltages. Similarly, polyswitches are fitted to each group of 8 channels outputs for over-current protection. Output rating: max 35VDC, 100mA per pin.

#### Functions and connectors are compatible with PCI compatible board PO-128L(PCI)H.

The functions same with PCI compatible board PO-128L(PCI)H are provided.

In addition, as there is compatibility in terms of connector shape and pin assignments, it is easy to migrate from the existing system.

## LabVIEW is supported by a plug-in of dedicated library

Using the dedicated library VI-DAQ makes it possible to make a LabVIEW application.

This product is a PCI Express bus-compliant interface board used to provide a digital signal Output function on a PC.

This product can output digital signals at 12 - 24VDC.

This product features 128 Optocoupler isolated open-collector outputs. In addition, output transistor protection circuit (surge voltage protection and overcurrent protection).

Windows/Linux driver is bundled with this product.

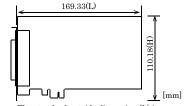
Possible to be used as a data recording device for LabVIEW, with dedicated libraries.

#### **Specification**

li	tem	Specification
Output		
Output fo	ormat	Optocoupler isolated open-collector output (current sink type)(Negative logic *1)
Number signal ch	of output nannels	128 channels (1 common per 16 channels unit)
Output rating	Output voltage	35VDC (Max.)
	Output current	100mA (par 1 channel) (Max.)
Residua output o	I voltage with	0.5V or less (Output current≤50mA), 1.0V or less (Output current≤100mA)
Surge pr	otector	Zener diode RD47FM(NEC) or equivalent to it
Respons	se time	Within 200μsec
Common		
Allowabl signal ex		Approx. 50m (depending on wiring environment)
I/O addr	ess	Any 32-byte boundary
Interrupt	ion level	Not used
Max. boo	ard count for on	16 boards including the master board
Isolated	Power	250Vrms
External supply	circuit power	12 - 24VDC(±10%)
Power co (Max.)	onsumption	3.3VDC 600mA
Operatin	g condition	0 - 50°C, 10 - 90%RH (No condensation)
Bus spec	cification	PCI Express Base Specification Rev. 1.0a x1
Dimensi	on (mm)	169.33(L) x 110.18(H)
Connect	or	100 pin 0.8mm pitch connector [F (female) type] x 2 HDRA-E100W1LFDT1EC-SL+[HONDA TSUSHIN KOGYO CO., LTD.] or equivalent to it
Weight		215g
Certification	n	RoHS,CE,VCCI

Data "0" corresponds at the High level and data "1" correspond at the Low level.

#### **Board Dimensions**



The standard outside dimension (L) is the distance from the end of the board to the outer surface of the slot cover.



#### **Support Software**

#### Windows version of digital I/O driver API-DIO(WDM) / API-DIO(98/PC)

#### [Stored on the bundled Disk driver library API-PAC(W32)]

The API-DIO(WDM) / API-DIO(98/PC) is the Windows version driver library software that provides products in the form of Win32 API functions (DLL). Various sample programs such as Visual Basic and Visual C++, etc and diagnostic program useful for checking operation is provided.

You can download the updated version from the CONTEC's Web site. For more details on the supported OS, applicable language and new information, please visit the CONTEC's Web site.

#### Linux version of digital I/O driver API-DIO(LNX) [Stored on the bundled Disk driver library API-PAC(W32)]

The API-DIO(LNX) is the Linux version driver software which provides device drivers (modules) by shared library and kernel version. Various sample programs of gcc are provided. You can download the updated version from the CONTEC's Web site. For more details on the supported OS, applicable language and new information, please visit the CONTEC's Web site.

#### Data acquisition VI library for LabVIEW VI-DAQ (Available for downloading (free of charge) from the CONTEC web site.)

This is a VI library to use in National Instruments LabVIEW. VI-DAQ is created with a function form similar to that of LabVIEW's Data Acquisition VI, allowing you to use various devices without complicated settings.

For more details on the supported OS, applicable language and new information, please visit the CONTEC's Web site.

#### **Cable & Connector**

#### Cable (Option)

Shielded Cable With Two 100pin Connector

: PCB100PS-0.5 (0.5m) : PCB100PS-1.5 (1.5m) : PCB100PS-3 (3m)

: PCB100PS-5 (5m)

Connection Conversion Shield Cable (100P→96P)

: PCB100/96PS-1.5 (1.5m) : PCB100/96PS-3 (3m) : PCB100/96PS-5 (5m)

Flat Cable with One 100-Pin Connector

: PCA100P-1.5 (1.5m) : PCA100P-3 (3m)

Connection Conversion Shield Cable (100P→37P D-SUB x 2)

: PCB100WS-1.5 (1.5m) : PCB100WS-3 (3m) : PCB100WS-5 (5m)

#### **Accessories**

#### **Accessories (Option)**

Screw Terminal Unit (M3 x 100P) : EPD-100A \*1\*4\*6 Screw Terminal Unit (M3 x 96P) : EPD-96A \*2\*4\*6 Screw Terminal Unit (M3.5 x 96P) : EPD-96 \*2\*4 Terminal Unit for Cables (M2.5 x 96P) : DTP-64A \*2\*4

Connector Conversion Board

(96-Pin→37-Pin x 2) : CCB-96 \*2\*4

Signal Monitor / Output Accessory

for Digital I/O (64P) : CM-64L \*2\*4 Screw Terminal Unit (M3 x 37P) : EPD-37A \*3\*5\*6 : EPD-37 \*3\*5 Screw Terminal Unit (M3.5 x 37P) General Purpose Terminal (M3 x 37P) : DTP-3C \*3\*5 : DTP-4C \*3\*5 Screw Terminal (M2.5 x 37P)

- PCB100PS optional cable is required separately.
- PCB100/96PS optional cable is required separately.

  PCB100WS optional cable is required separately.
- If using both the CNA and CNB connectors, two each of the terminal block and cable sets \*5 If using both the CNA and CNB connectors, two cable sets are required.
- You will also require sufficient terminal blocks for the number of I/O points you are using.
- \*6 "Spring-up" type terminal is used to prevent terminal screws from falling off.
- Check the CONTEC's Web site for more information on these options.

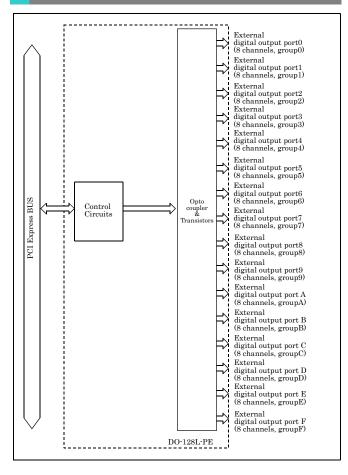
### **Packing List**

Board [DO-128L-PE] ...1 First step guide ... 1 Disk \*1 [API-PAC(W32)] ...1 Serial number label...1

Product Registration Card & Warranty Certificate...1

The Disk contains the driver software and User's Guide.

## **Block Diagram**



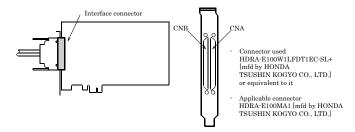
If using both the CNA and CNB connectors, two cable sets are required.



## How to connect the connectors

#### **Connector shape**

The on-board interface connector (CNA, CNB) is used when connecting this product and the external devices.



<sup>\*</sup> Please refer to page 2 for more information on the supported cable and accessories.

### **Connector Pin Assignment**

Pin Assignments Interface Connector (CNA, CNB)

Common   P.E.F.   100	_		_			_						_					
Fig.   P.E.F.   P.E.F.   99   49   P.A.B.   *44   48   P.A.B.   *44   47   74   74   75   75   75   75	Common	P-E/F	100			50	P-A/B	Common			N-0/1	1			51	N-4/5	
Ag   P-A/B   Ay-B   A	plus pin							plus pin									
Output	for							for									
Output	+F/+F	P-F/F	QQ.			49	P-A/R	+A/+B		Common	N=0/1	2			52	N-4/5	Common
Ports   Priss   Pris			00			-10	. ,,,,					-			O.L		
C-F7   39	norte							norte							l		for □+4/+5
Common   Refr	porto							porta				_					
A F port   Common   Port   P										Dutput		З					
F. F. port   C. F. pl.   C.		O-F6	97			47	O-B6			ports	N-0/1	4			54	N-4/5	ports
For   OFF   Sep   Common   N=EF   Sep																	
Common   Number   Part   Par																	
C.P.Z. 33   C.N.B.   S. D. C.N.B.	+F port	O-F4	95			45		+B port			N-0/1	6			56	N-4/5	
C.P.Z. 33   C.N.B.   S. D. C.N.B.	(Output)	O.F3	94			44	O-B3	(Output)			0.00	7			57	0.40	
CFR   92   100   50   52   CFR   59   100   50   52   CFR   59   50   50   50   50   50   50   50	()			CNB				(					CNA				
O.F.D. 31													Com				
O-F0 91		O-F1	92	100-	-50	42	O-B1				O-02	9	1	7 -=1	59	O-42	
O.E.   Solution   Common   POr.   Table   POr.   Ta		O-F0	91			41	O-B0				O-03	10	, ,	1 "	60	0-43	+4 port
Common   N=EF   72   28   N=EF   77   N=EF   77   N=EF   77   N=EF   77   N=EF   78   N=EF   78   N=EF   78   N=EF   79   N=EF   77   N=EF   77   N=EF   77   N=EF   77   N=EF   77   N=EF   77   N=EF   78   N=EF   78   N=EF   79   N=										+0 port			11				(Output)
Cube   Dec										(Output)							(Output)
Fe port   C-E-8   87   Common   Commo			89			39	O-A6			( 1 - 7	O-05	12			62	O-45	
Fe port   C-E-8   87   Common   Commo		O.F5	88		1	38	0-45				0.06	13			63	0.46	
Section   Color   Co																	
O-E2   85   O-A2   34   O-A1   O-A1   16   O-A2   O-E0   83   O-A2   O-E0   83   O-A2   O-E0   83   O-A2   O-E0   83   O-A3   O-A2   O-E0   A3   O-A2   O-E0   A3   O-A2   O-E0   A3   O-A3   O-A2   O-E0																	
O-E1   84   34   O-A1   33   O-A0   33   O-A0   34   O-A1   19   O-E2	(Output)		86			36	O-A3	(Output)			O-10	15			65	O-50	
O-E1   84   34   O-A1   33   O-A0   33   O-A0   34   O-A1   19   O-E2		O.F2	85		1	35	Ο-Δ2				0.11	16			66	O <sub>*</sub> 51	
O-E0   R3   N-AB   R4   R5   R5   R5   R5   R5   R5   R5																	
N.E.F   82   N.A.B   31 N.A.B   Common   N.E.F   80   30 N.A.B   minus pin   N.E.F   79   28 N.A.B   minus pin   N.E.F   77   27 N.A.B   ports   28 N.C.   28 N.C.   28 N.C.   28 N.C.   27 N.A.B   ports   N.E.F   77   28 N.C.   27 N.A.B   ports   N.E.F   77   28 N.C.   28 N.C.   25 N.C.   N.C.   26 N.C.   N.C.   27 N.A.B   ports   N.E.F   78 N.E.F   79 N.E.F																	
N-E/F   82     32   N-A/B   (Oulput)   69   0-54   (Oulput)   69   0-54   (Oulput)   60   15   20   0-16   21     71   0-56   0-16   21   0-17   0-1		O-E0	83			33	O-A0				O-13	18			68	O-53	+5 port
Near		N-F/F	82			32	N-A/R			+1 port	0-14	19			69	0.54	
Common   N=EF   80     30   N=AB   Common   N=EF   79     28   N=AB   More   N=EF   79   N=AB   More   N=EF   79   N=AB   More   N=EF   79   N=AB   N=B   N=EF										(Output)							(
minus pin NEF 79																	
For   NE/F   78   Output   O	Common	N-E/F	80			30	N-A/B	Common			0-16	21			71	O-56	
For   NE/F   78   Output   O	minus pin	NLE/E	70			20	NLA/R	minus pin			0-17	22			72	0.57	
All-Bases   All-																	
Output ports         N.E.F         77         V.E.F         74         P.4.F         44/+5	+E/+E	N-E/F	78			28	N-A/B	+4/+B			P-0/1	23			73	P-4/5	
Ports   N-E/F   77     27   N-AB   Ports   A  -1   A  -1   24   Output   Ports   A  -1   A																	
N.C.   76   26   N.C.   26   N.C.   25																	
N.C. 76	ports	N-F/F	77			27	N-A/R	ports		+0/+1	P=0/1	24			74	P-4/5	+4/+5
N.C. 76					- 1											. 4,0	
N.C. 76															l		
N.C.   75   75   75   75   76   76   76   76					-					porto							porta
Common   P.C/ID   74   P.B.99   Common   Port   P																	
Puls pin for		N.C.	75			25	N.C.				N.C.	26			76	N.C.	
Puls pin for	Common	P <sub>*</sub> C/D	74			24	P.8/9	Common			N=2/3	27			77	N-6/7	
Common   N-2/3   28   T8   N-8/7   Common   N-2/3   29   T8   N-8/7   Common   N-2/3   29   T8   N-8/7   Common   N-2/3   30   T8   N-8/7   Common   N-2/3   40   T8   N-2/3   T8   N-		1 -0/D	7-4		- 1	24	1 -0/3				14-2/3	21			"	14-0//	
Active   PcCiD   PcC								pius piii							l		
Output ports										0							0
Dorts   Dort		P-C/D	73			23	P-8/9			Common	N-2/3	28			78	N-6/7	Common
Common NCD   St   St   Common NCD   St   Common NCD   St   Common NCD   St   Commo								output		minus pin							minus pin
O-DG   77   O-DG   70   O-DG	ports							ports									
O-DG   77   O-DG   70   O-DG		O-D7	72			22	0.07			output	NL-2/3	20			70	N-6/7	output
Dopt																	
AD port   Ci-D4   69   69   69   69   69   69   69   6										p = - 10							Perio
Coupury   C-D3   68   C-B2   Coupury   C-D2   C-D		O-D5	70			20	O-95				N-2/3	31			81	N-6/7	
Coupury   C-D3   68   C-B2   Coupury   C-D2   C-D	. D nort	O-D4	60			10	0.04	I O port			NL-2/3	32			82	N-6/7	
Common Not   Common   Common Not   Common	(Output)							(Output)									
C-D1   66   C-D2   65   C-D2   65   C-D2   65   C-D2   65   C-D2   65   C-D2	(Output)							(Output)									
C-DO   65   C-DO   C-		O-D2	67			17	0-92				0-21	34			84	0-61	
C-DO   65   C-DO   C-		O-D1	66			16	0.01				0-22	35			85	0.62	
Corp	1							]	ш				1 11	11			
O-C6   63   63   63   63   64   65   64   64   64   64   64   64				1 11 11					ı				1 11	11			
O-C6   63   63   63   63   64   65   64   64   64   64   64   64		O-C7	64	1 11 11		14	0-87		ı	(Output)	0-24	37	1 11	11	87	0-64	
Common   C	1							]	ш				1 11	11			
C   Ord   C   C   C   C   C   C   C   C   C	1			1 11 11				l J	1				1 11	11			1
Output   Oct   O	1			1 11 11		12			ı				1 11	11			
Output   Oct   O	+C port	O-C4	61		- 1	11	O-84	+8 port	ш	l	0-27	40	1 11	11	90	0-67	
O-C2   59   51   1   9   O-82   7   0   0   0   1   0   0   0   0   0   0									1				I レ〜	LI.			
O-C2   59	(Output)			I/LN				(Jutput)	ı				50	17\100			
O-C0   57   7   O-80   N-C0   56   N-99   O-80   N-C0   56   N-899   O-80   N-C0   56   N-899   O-80   N-C0   54   N-899   O-80   N-C0   54   N-899   O-80   N-C0   54   N-899   O-80   N-C0   55   N-899   O-80   N-C0   O-80   N-C0   O-80   N-899   O-80   N-899   O-80   N-899   O-80   O-8	1	O-C2	59	91	-1	9	O-82		ı		0-31	42	- 00	100 ر	92	0-71	
O-C0   57   7   O-80   N-C0   56   N-99   O-80   N-C0   56   N-899   O-80   N-C0   56   N-899   O-80   N-C0   54   N-899   O-80   N-C0   54   N-899   O-80   N-C0   54   N-899   O-80   N-C0   55   N-899   O-80   N-C0   O-80   N-C0   O-80   N-899   O-80   N-899   O-80   N-899   O-80   O-8		O-C1	58	$\sim$		8	0.81				0.32	43			93	0.72	
N-CID   55   6   N-8/93   Common   N-CID   55   N-8/93   Common   N-CID   54   4   N-8/93   N-CID   54   4   N-8/93   N-CID   54   4   N-8/93   N-CID   54   1   N-8/93   N-CID   54   N-	1			1	-				ı								
Common   N-Cr0   55   5   N-99   Common   N-Cr0   54   4   N-99   minus pin   N-Cr0   54   4   N-99   minus pin   N-Cr0   53   3   N-99   N-Cr0   N-Cr0   52   2   N-99   N-99   N-Cr0   N-Cr0   52   2   N-99   N-99   N-Cr0   N-Cr0   N-Cr0   N-Cr0   N-Cr0   51   1   N-99   points   N-Cr0   51   N-99   P-2/3   50   N-Cr0				1	L				ı								
Common   N-Cr0   55   5   N-99   Common   N-Cr0   54   4   N-99   minus pin   N-Cr0   54   4   N-99   minus pin   N-Cr0   53   3   N-99   N-Cr0   N-Cr0   52   2   N-99   N-99   N-Cr0   N-Cr0   52   2   N-99   N-99   N-Cr0   N-Cr0   N-Cr0   N-Cr0   N-Cr0   51   1   N-99   points   N-Cr0   51   N-99   P-2/3   50   N-Cr0			56	1	Г	6 T	N-8/9		1	(Output)	0-34	45			95	0-74	(Output)
Common   N-C     54     4   N-8-95   Common   M-C     54	1			1				l J	1								
minus pin   N-C/D   53   4   N-S/D   70   70   N-C/D   51   1   N-S/D   90   10   10   10   10   10   10   10	Common			1				Common	ı								
for N-C/D 53 3 N-899 for AC/P D S2 2 N-899 eyes output Orts N-C/D 51 1 N-899 poins point N-C/D 51 1 N-899 point N-				I	L				ш	l							
-C/AD NC/D 52 2 N-899 +8/49 Common P-2/3 49 99 P-6/7 Common plus pin ports N-C/D 51 1 N-8/9 ports   1 N-8/9 po		N-C/D	53	1	Г	3	N-8/9	for	1		0-37	48			98	0-77	1
output ports         N-C/D         51         1         N-8/9         output ports         plus pin for::+2!+3 ports         plus pin for::+2!+3 output         p-2/3         50         100         P-6/7         for::+6!+7 output				I	-				ш	Common							Common
ports   N-C/D   51   1   N-8/9   ports     for   +2/+3   output   P-2/3   50   100   P-6/7   for   +6/+7   output		.4-0/0	UZ.	1	L	4	· v-urð		1	pluo pi-	213	70			99	0//	
N-C/D 51 1 N-8/9 1 0utput P-2/3 50 100 P-6/7 output		1		1					ı	pius pin	ı				ı	ĺ	
	ports	N <sub>2</sub> C/D	51	1		1	N.8/0	ports	1		P-2/2	50			100	P=6/7	
ports ports	1	.4-0,0	٥,	1			· v-urð		ı		2/3	50			100	0//	
	L	Щ.	ш.	1					Ш	ports	l	ᆫ			ı	ĺ	ports

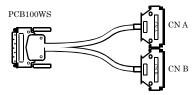
O-00 - O-F7	128 channels output signal. Connect input signals from the external device to these pins.
P-0/1 - P-E/F	Connect the positive side of the external power supply. These pins are common to 16 channels output signal.
N-0/1 - N-E/F	Connect the negative side of the external power supply. These pins are common to 16 channels output signal. One pin permissible current of the connector is 0.3A. Please connect necessary number of pins for the corresponding total current of the output 16 channels. When 16 channels are used by the output full ratings (100mA per 1 channel), it is necessary to connect six all.
N.C.	This pin is left unconnected.

## Pin assignments for connecting to the PCB100/96PS or PCB100WS



Common	N-C/D	B01		A01	N-8/9	Common	Common	N-4/5	B01			A01 N-0	/1 (	Common
□minus pin						□minus pin	□minus pin							minus pin
□for +C/+D	N-C/D	B02		A02	N-8/9	□for +8/+9	□for +4/+5	N-4/5	B02			A02 N-0		for +0/+1
□output	N-C/D	DU2		AUZ	14-0/9	□output	□output	14-4/5	D02			A02 IN-0		□output
ports						ports	ports							ports
		B03		A03	O-80				B03			A03 O-0		
	O-C1	B04		A04	O-81			O-41	B04			A04 O-0	11	
	O-C2	B05		A05	O-82			042	B05			A05 O-0	12	
+C port	O-C3	B06		A06	O-83	+8 port	+4 port	O-43	B06			A06 O-0	13	+0 port
(Output)	O-C4	B07		A07	O-84	(Output)	(Output)	0-44	B07			A07 O-0		(Output)
	O-C5	B08		A08	O-85			O-45	B08			A08 O-0	15	
		B09		A09	O-86				B09			A09 O-0		
		B10		A10	O-87				B10			A10 O-0		
		B11		A11	O-90				B11			A11 O-1		
		B12		A12	O-90				B12			A12 O-1		
_		B13		A13	O-92		_		B13			A13 O-1		
+D port		B14		A14		+9 port	+5 port		B14			A14 O-1		+1 port
(Output)		B15		A15	O-94	(Output)	(Output)		B15			A15 O-1		(Output)
		B16		A16	O-95				B16			A16 O-1		
		B17	For connecting the board CNB	A17	O-96		1		017	r connecting the b	ard CNA	A17 O-1		
		B18	BOX DAG TASE AND	A18	O-97					BOX [86] [48]	Acc	A18 O-1		
Common	P-C/D	B19	N 11	A19	P-8/9	Common	Common	P-4/5	B19	1	1	A19 P-0		Common
□plus pin						□plus pin	□plus pin							□plus pin
□for +C/+D	P-C/D	B20		A20	P-8/9	□for +8/+9	□for +4/+5	P-4/5	B20			A20 P-0		for +0/+1
□output	. 0,0	DLO		,	. 0.0	□output	□output	. 4,0	520			, LLO   . O.		□output
ports						ports	ports							ports
	N.C.	B21		A21	N.C.				B21			A21 N.C		
	N.C.	B22		A22	N.C.				B22			A22 N.C		
		B23		A23	N.C.				B23			A23 N.C		
Unconnected		B24		A24	N.C.	Unconnected	Unconnected		B24			A24 N.C		connected
Oncomiected		B25		A25	N.C.	Onconnected	Officonfilected		B25			A25 N.C	). I	icomiecteu
	N.C.	B26		A26	N.C.			N.C.	B26			A26 N.C		
	N.C.	B27		A27	N.C.				B27			A27 N.C	).	
	N.C.	B28		A28	N.C.			N.C.	B28			A28 N.C	).	
Common	N-E/F	B29		A29	N-A/B	Common	Common	N-6/7	B29			A29 N-2	/3 (	Common
□minus pin						□minus pin	□minus pin							minus pin
□for +E/+F	N-E/F	B30		420	N-A/B	□for +A/+B	□for +6/+7	N-6/7	B30			A30 N-2		for +2/+3
□output	IN-E/F	D30		AJU	IN-AVD	□output	□output	14-0/7	D30			A30 IN-2	13	□output
ports						ports	ports							ports
	O-E0	B31	But Aus	A31	O-A0				B31	But 1	AIR	A31 O-2		
		B32	[49] [1]	A32	O-A1				B32	[49] [1]	J	A32 O-2		
	O-E2	B33		A33	O-A2			O-62	B33			A33 O-2	2	
+E port	O-E3	B34		A34	O-A3	+A port	+6 port	O -63	B34			A34 O-2	3	+2 port
(Output)	O-E4	B35		A35	O-A4	(Output)	(Output)	O-64	B35			A35 O-2	4	(Output)
	O-E5	B36		A36	O-A5			O-65	B36			A36 O-2	5	
		B37		A37	O-A6		1		B37			A37 O-2		
		B38		A38	O-A7		1		B38			A38 O-2		
		B39		A39	O-B0				B39			A39 O-3		
		B40		A40	O-B1		1		B40			A40 O-3		
	0-F1	B41		A41	O-B1		1		B41			A41 O-3		
.5		B41		A41	O-B2	. D	.7		B42			A41 O-3		. 0
+F port						+B port	+7 port							+3 port
(Output)		B43		A43	O-B4	(Output)	(Output)		B43			A43 O-3		(Output)
1	O-F5	B44		A44	O-B5		1		B44			A44 O-3		
1	O-F6	B45		A45	O-B6		1		B45			A45 O-3		
	0-F7	B46		A46	O-B7				B46			A46 O-3		
Common	P-E/F	B47		A47	P-A/B	Common	Common	P-6/7	B47			A47 P-2		Common
□plus pin						□plus pin	□plus pin							□plus pin
□for +E/+F	P-E/F	B48		A48	P-A/B	□for +A/+B	□for +6/+7	P-6/7	B48			A48 P-2		for +2/+3
□output ports		-				□output ports	□output ports	1 ~ 1	- 1			1 1 -		□output ports
				<u> </u>			POILS			LTE		1 1		ρυιιδ

<sup>\*[]</sup> shows pin numbers specified by HONDATSUSHIN KOGYO CO., LTD.



	N.C.	19					:		N.C.	19				
Common    plus pin   for +8/+9   output   ports		18		37	P-A/B	Common □plus pin □for +A/+B □output ports		Common   plus pin  for +0/+1  output  ports	P-0/1	18		37	P-2/3	Commo □plus pi □for +2/+ □output ports
+9 port (Output)	O-97 O-96 O-95 O-94 O-93 O-92 O-91 O-90	17 16 15 14 13 12 11	CNA of PCB100WS connecting to the board CNB 19 8 8 37	36 35 34 33 32 31 30 29	O-B7 O-B6 O-B5 O-B4 O-B3 O-B2 O-B1 O-B0	+B port (Output)		+1 port (Output)	O-17 O-16 O-15 O-14 O-13 O-12 O-11 O-10	17 16 15 14 13 12 11	CNA of PCB100WS connecting to the board CNA	36 35 34 33 32 31 30 29	O-37 O-36 O-35 O-34 O-33 O-32 O-31 O-30	+3 port (Output
+8 port (Output)	O-87 O-86 O-85 O-84 O-83 O-82 O-81 O-80	9 8 7 6 5 4 3	1 8 8 20	28 27 26 25 24 23 22 21	O-A7 O-A6 O-A5 O-A4 O-A3 O-A2 O-A1 O-A0	+A port (Output)		+0 port (Output)	O-07 O-06 O-05 O-04 O-03 O-02 O-01 O-00	9 8 7 6 5 4 3	1 8 8 20	28 27 26 25 24 23 22 21	O-27 O-26 O-25 O-24 O-23 O-22 O-21 O-20	+2 port (Output
Common minus pin for +8/+9 output ports		1		20	N-A/B	Common  minus pin  for +A/+B  output  ports		Common □minus pin □for +8/+9 □output ports	N-0/1	1		20	N-2/3	Commo □minus pin □fo +A/+B □outpu ports

	N.C.	19					ŝ١		N.C.	19				
Common □plus pin □for +C/+D □output ports				37	P-E/F	Common □plus pin □for +E/+F □output ports		Common □plus pin □for +4/+5 □output ports		18		37	P-6/7	Common □plus pin □for +6/+7 □output ports
+D port (Output)	O-D7 O-D6 O-D5 O-D4 O-D3 O-D2 O-D1 O-D0	13 12 11 10	CNB of PCB100WS connecting to the board CNB	36 35 34 33 32 31 30 29	O-F1	+F port (Output)		+5 port (Output)	O-57 O-56 O-55 O-54 O-53 O-52 O-51 O-50	17 16 15 14 13 12 11	CNB of PCB100WS connecting to the board CNA	36 34 33 32 31 30 29	0-77 0-76 0-75 0-74 0-73 0-72 0-71 0-70	+7 port (Output)
+C port (Output)	0-C7 0-C6 0-C5 0-C4 0-C3 0-C2 0-C1 0-C0	9 8 7 6 5 4 3	1 8 8 20	28 27 26 25 24 23 22 21	O-E7 O-E6 O-E5 O-E4 O-E3 O-E2 O-E1 O-E0	+E port (Output)		+4 port (Output)	O-47 O-46 O-45 O-44 O-43 O-42 O-41 O-40	9 7 6 5 4 3	1 8 8 20	28 27 26 25 24 23 22 21	O-67 O-66 O-65 O-64 O-63 O-62 O-61 O-60	+6 port (Output)
Common  minus pin  for +C/+D  output  ports	N-C/D	1		20	N-E/F	Common  minus pin  for +E/+F  output  ports		Common □minus pin □for +4/+5 □output ports	N-4/5	1		20	N-6/7	Common □minus pin □for +E/+F □output ports



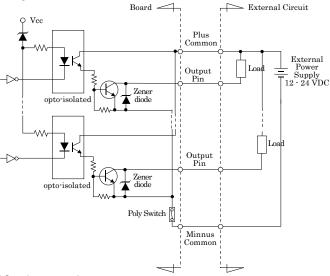
## **Connecting Output Signals**

Connect the output signals to a current-driven controlled device such as a relay or LED.

The connection requires an external power supply to feed currents.

The board controls turning on/off the current-driven controlled device using a digital value.

#### **Output Circuit**



\* O-xx shows output pins.

This product output circuit of interface is illustrated in the image above.

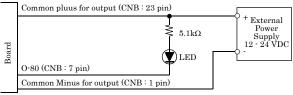
The signal output section is an Optocoupler isolated, open-collector output (current sink type). Driving the output section requires an external power supply.

The rated output current per channel is 100mA at maximum. The output section can also be connected to a TTL level input as it uses a low-saturated transistor for output. The residual voltage (low-level voltage) between the collector and emitter with the output on is 0.5V or less at an output current within 50mA or at most 1.0V at an output current within 100mA. A zener diode is connected to the output transistor for protection from surge voltages. A PolySwitch-based overcurrent protector is provided for every eight output transistors. When the overcurrent protector works, the output section of the board is temporarily disabled. If this is the case, turn of the power to the PC and the external power supply and wait for a few minutes, then turn them on back.

#### **⚠** CAUTION

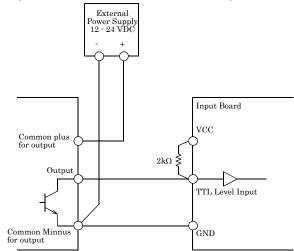
When the PC is turned on, all output are reset to OFF.

## Connecting to the LED



When "1" is output to a relevant bit, the corresponding LED comes on. When "0" is output to the bit, in contrast, the LED goes out.

#### **Example of Connection to TTL Level Input**



# Connecting the Sink Type Output and Sink Output Support Input

The following example shows a connection between a sink type output (output board) and a sink output support input (input board). Refer to this connection example when you connect such boards to each other.

